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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,288	01/25/2005	Giuseppe Pasqualini	IT 020023	1504

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EXAMINER

CARTER III, ROBERT E

ART UNIT	PAPER NUMBER
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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,288	Applicant(s) PASQUALINI ET AL.	
	Examiner Robert E. Carter	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/25/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-10 is/are rejected.
- 7) ☒ Claim(s) 6-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1-25-05, 9-1-05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Drawings

3. The drawings are objected to because the rectangular boxes need to be labeled

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi (US Patent # 5,815,134).

As for claim 1, Nishi (Fig. 3) discloses:

*A method for driving a liquid crystal cell Col. 6, lines 4-6), comprising the steps of:
receiving a data source signal from a data source (202); measuring a residual voltage level remaining in this cell from a previous frame (Col. 5, lines 14-16); calculating a drive*

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signal as a function of said data source signal and said residual voltage level (Col. 5, lines 41-45); and applying the drive signal to said cell (Col. 6, lines 19-21).

As for claim 2, Nishi (Fig. 3) teaches:

A liquid crystal display driver circuit, comprising: sense means (302) for sensing a cell voltage of a liquid crystal cell and providing a sense means output signal representing said cell voltage (Col. 6, lines 23-27); drive voltage generating means (306, 301) for generating a data drive signal on the basis of a data source signal, on the one hand, and said sense means output signal, on the other hand (Col. 6, lines 28-36, 41-50); drive signal application means (304) for applying the thus generated data drive signal to the liquid crystal cell (Col. 6, lines 37-40); and a switch controller (202) for controlling the timing of the sense means and the drive signal application means (Col. 6, lines 21-23).

As for claim 3, Nishi (Fig. 3) teaches:

a data signal input (305+) for coupling to an output of a data source (202); a gate signal input (205) for coupling to a gate pulse source (202); a circuit output (output of 304) for coupling to a data line (204) of a liquid crystal display; the drive voltage generating means having a first input (305+) coupled to the data signal input; said drive signal application means being coupled between an output of the drive voltage generating means (output of 305) and said circuit output; said sense means being coupled between a second input of said drive voltage generating means (input of 306) and said circuit output.

As for claim 5, Nishi (Fig. 3) teaches:

wherein said drive signal application means comprise a first controllable switch (304) having a control input coupled to a first output of the switch controller; wherein said sense means comprise a second controllable switch (302) having a control input coupled to a second output of said controller; wherein said switch controller has an input coupled to the gate signal input (The driving waveform generator 202 contains both the switch controller and the gate pulse source, therefore the switch controller input is coupled to the gate signal input).

As for claim 9, Nishi (Fig. 2, 3) teaches:

A liquid crystal display, comprising a matrix of pixels arranged in rows and columns (Col. 3, lines 37-46), each pixel comprising a liquid crystal cell having one terminal (207) connected to a drain electrode of a driver transistor, a source electrode of the driver transistor being connected to a column data line (204) and a gate electrode of the driver transistor being connected to a row gate line (205); each row gate line being coupled to a corresponding output of a gate driver (202); each column data line being associated with a liquid crystal display driver circuit according to claim 2, each column data line being coupled to the output of the associated driver circuit (302, 306, 301, 304), the data input (305+) of this associated driver circuit being coupled to a corresponding output of a data driver (202).

As for claim 10, Nishi (Fig. 3) teaches:

An integrated data source, comprising: a data source (202) having an output for providing a data source signal (data signal); and a liquid crystal display driver circuit according to claim 2.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Kobayashi et al. (US Patent # 5,596,349).

As for claim 4, Nishi teaches a liquid crystal driver circuit according to claims 1-3. However, Nishi does not teach the sense means comprising a latch.

In the same field of endeavor (i.e. LCD display drivers with correction circuits) Kobayashi et al. (Fig. 4) discloses:

a latch (111) having an output coupled to said second input of said drive voltage generating means (112, 113, 114, 115, 116, 117).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD driver circuit in Nishi by adding the latch in Kobayashi et al. to the sense means in Nishi, to enable precise timing of the input data into the voltage generating means (Kobayashi et al. Col. 9, lines 17-21).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Johnson et al. (US Patent # 6,304,254).

As for claim 8, Nishi further teaches:

wherein the drive voltage generating means comprise: a function calculation unit (306, 301), for receiving the data source signal and the sense means output signal,

As to the limitation of an "adder", The examiner would like to point out that the function calculation unit in Nishi et al. performs both the function of calculating the correction signal, and the function of adding the correction signal to the data signal by directly calculating the drive signal from the data signal and the sensed pixel cell voltage (Col. 5, lines 27-58). Furthermore, page 8, lines 23-25 of the specification of the instant application states that the function calculation unit and the adder can be combined into an alternative calculator unit which directly calculates the output signal.

Moreover, the examiner cited the reference of Johnson et al. to teach the limitation of an "adder".

In the same field of endeavor (i.e. LCD display drivers with correction circuits) Johnson et al. (Fig. 7) discloses:
an adder (34) for adding the data source signal (Data in) to a correction signal (Correction), being an output of the function calculation unit (32, 33); and an output of the adder (Data), being the output of the drive voltage generating means.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD driver circuit in Nishi by adding the adder in Johnson et al. in between the function calculation unit and the drive signal application means to add the correction signal to the data source signal, in order to enable the display to be driven at video speed (Johnson et al. Col. 1, lines 39-43).

Allowable Subject Matter

10. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
Edwards et al. (US Patent # 7,230,597) discloses an LCD display which senses pixel voltages.

Park et al. (US Patent # 7,161,568) discloses an LCD display which senses cell capacitance.

Hector et al. (US Patent # 6,911,966) discloses an LCD display which measures residual pixel voltage from the difference of charge stored on two pixels.


Kobayashi et al. (US Patent # 5,784,040) discloses an LCD display driver with correction circuitry and a latch.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert E. Carter whose telephone number is 571-270-3006. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on 571-272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

REC


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SUPERVISORY PATENT EXAMINER